Preface

Nowadays, computational methodologies of signal processing and imaging analysis for 2D, 3D and even 4D data are commonly used for various applications in society. For example, Computational Vision systems are progressively used for surveillance tasks, traffic analysis, recognition process, inspection purposes, human-machine interfaces, 3D vision and deformation analysis.

One of the main characteristics of the Computational Vision domain is its inter-multidisciplinary nature. In fact, in this domain, methodologies of several other fundamental sciences, such as Informatics, Mathematics, Statistics, Psychology, Mechanics and Physics are regularly used. Besides this inter-multidisciplinary characteristic, one of the main rationale that promotes the continuous effort being made in this area of human knowledge is the number of applications in the medical area. For instance, statistical or physical procedures on medical images can be used in order to model the represented structures. This modelling can have different goals, for example: shape reconstruction, segmentation, registration, behavioural interpretation and simulation, motion and deformation analysis, virtual reality, computer-assisted therapy or tissue characterization.

The main objective of the ECCOMAS Thematic Conferences on Computational Vision and Medical Image Processing (VIPimage) is to promote a comprehensive forum for discussion on the recent advances in the related fields and try to identify areas of potential collaboration between researchers of different sciences.

This book contains the extended versions of nineteen papers selected from works presented at the second ECCOMAS thematic conference on Computational Vision and Medical Image processing (VIPimage 2009), which was held at the Engineering Faculty of the University of Porto, Portugal. It gathers together the state-of-the-art on the subject of Computational Vision and Medical Image processing contributing to the development of these knowledge areas and showing new trends in these fields.

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